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Heart Failure

EFFECTS OF BETA-BLOCKER ON HEART RATE REDUCTION AND COLLAGEN DEGRADATION IN PATIENTS WITH HEART FAILURE REDUCED EJECTION FRACTION

Poster Contributions
Poster Sessions, Expo North
Sunday, March 10, 2013, 9:45 a.m.-10:30 a.m.

Session Title: Novel and Standard Pharmacological Therapies in Heart Failure: Which Treatment for Which Patient
Abstract Category: 15. Heart Failure: Clinical
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Background: Beta-blocker therapy improves LV systolic function and the prognosis in patients with chronic heart failure (CHF). However, it is unknown how and why it works. Recently, serum collagen marker, collagen type I C-terminal telopeptide (CITP), is useful as an index of myocardium collagen degradation. Thus, we investigated inter-relationship among LV functional recovery, heart rate (HR) reduction and CITP.

Methods: Study population consisted of 62 patients (mean age 58 years) with CHF due to LV systolic dysfunction. We started beta-blocker therapy (bisoprolol), initiated at a target dose of from 5 to 10 mg/day. Echocardiography and tissue Doppler imaging were performed to measure LV ejection fraction (LVEF) and longitudinal strain (LS) at baseline, 1 and 6 months after bisoprolol induction. Serum CITP was also determined.

Results: HR reduced and LS increased at 1 month and there were no further improvements. LVEF and CITP gradually changed up to 6 months. The degree of improvement in LS from baseline to 1 month ([[Unable to Display Character: ⊿]]1LS) was independently associated with the degree of improvement in LVEF from baseline to 6 months (r = -0.45, p = 0.02). HR reduction and the degree of decrease in CITP from baseline to 1 month were correlated with [[Unable to Display Character: ⊿]]1LS (r = 0.37, p < 0.05, r = -0.39, p < 0.05, respectively).

Conclusion: HR reduction and Inhibition of collagen degradation may contribute to LV functional recovery in patients with CHF receiving beta-blocker therapy.

Changes before and after beta-blocker induction

	baseline	1 month	6 months
LVEF (%)	31 ± 11	41 ± 13*	45 ± 12*
Longitudinal strain (%)	-17 ± 5	-24 ± 7*	-24 ± 6*
HR (bpm)	73 ± 16	62 ± 13*	63 ± 18*
CITP (ng/ml)	10.7 ± 11.9	8.2 ± 3.7	6.7 ± 2.2*†
Mean ± SD, * p < 0.05 vs. before, † p < 0.05 vs. 1 month			